

CLAIMS

- 1 1. A method of lithography for enhancing uniformity of critical dimensions of
2 features patterned onto a workpiece using a multipass writing strategy, the method
3 comprising the actions of:
 - 4 - coating said workpiece with a coating sensitive to an energy beam,
 - 5 - providing an energy beam source,
 - 6 - determining an individual dose for each pass so that each pass will
7 affect said coating essentially equal, thereby enhancing said uniformity
8 of critical dimension,
 - 9 - exposing said coating in said multipass writing strategy by using said
10 individual dose for each pass,
 - 11 - developing said coating.
- 12 2. The method according to claim 1 further comprising the action of:
 - 2 - creating said features by a spatial light modulator.
- 1 3. The method according to claim 1, wherein said energy beam source is a
2 electromagnetic radiation source emitting pulsed radiation in the range of EUV-DUV.
- 1 4. The method according to claim 1, further comprising the action of:
 - 2 - creating said features by a modulator and deflector arrangement
3 capable of deflecting and setting the intensity of said radiation beam.
- 1 5. The method according to claim 1, further comprising the action of:
 - 2 - creating said features by a diffraction grating.
- 1 6. The method according to claim 1, wherein said method comprises 2 exposure
2 passes, of which a first exposure pass has a dose less than half of an exposure

3 threshold and a second exposure pass has a dose greater than half of the exposure
4 threshold.

1 7. The method according to claim 1, wherein said method comprises 3 exposure
2 passes or more, of which said dose is increased linearly for every following pass.

1 8. The method according to claim 1, wherein said method comprises 3 exposure
2 passes or more, of which said dose is increased exponentially for every following
3 pass.

1 9. The method according to claim 1, wherein said method comprises 3
2 exposure passes or more, of which said dose is increased logarithmically for every
3 following pass.

1 10. The method according to any one of claims 1-9, wherein each portion
2 of said workpiece is patterned with a first exposure pass before exposing a next
3 exposure pass.

1 11. The method according to claim 10, wherein said portions are exposed
2 in the same direction.

1 12. The method according to claim 10, wherein said portions are exposed
2 in alternating directions.

1 13. The method according to any one of claims 1-12, wherein the dose of
2 the last exposure is within the range of 40% to 60% higher than the first exposure.

1 14. The method according to any one of claims 1-12, wherein the dose of
2 the last exposure is within the range of 45% to 55% higher than the first exposure.

1 15. The method according to claim 1, wherein the coating sensitive to
2 electromagnetic radiation is a chemically amplified resist (CAR).

1 16. The method according to claim 1, wherein said workpiece is a mask substrate.

1 17. The method according to claim 13 or 14, wherein four writing passes are
2 used.